CNF Orchestration in ONAP
- Support Containerized Network Functions

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Summary for the requirement subcommittee

Executive Summary - Provide CNF orchestration support through integration of K8s adapter in ONAP SO

- Support for provisioning CNFs using an external K8s Manager
- Support the Helm based orchestration
- leverage the existing functionality of Multi cloud in SO
- Bring in the advantages of the K8s orchestrator and
- Set stage for the Cloud Native scenarios

Business Impact - Enables operators and service providers to orchestrate CNFs based services along with the VNFs and PNFs

Business Markets - All operators and service providers that are intended to use the CNFs along with PNFs / VNFs

Funding/Financial Impacts - Reduction in the footprint of the ONAP for CNF support.

Organization Mgmt, Sales Strategies - *There is no additional organizational management or sales strategies for this requirement outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.*

ONAP – Impacted Components - Guilin
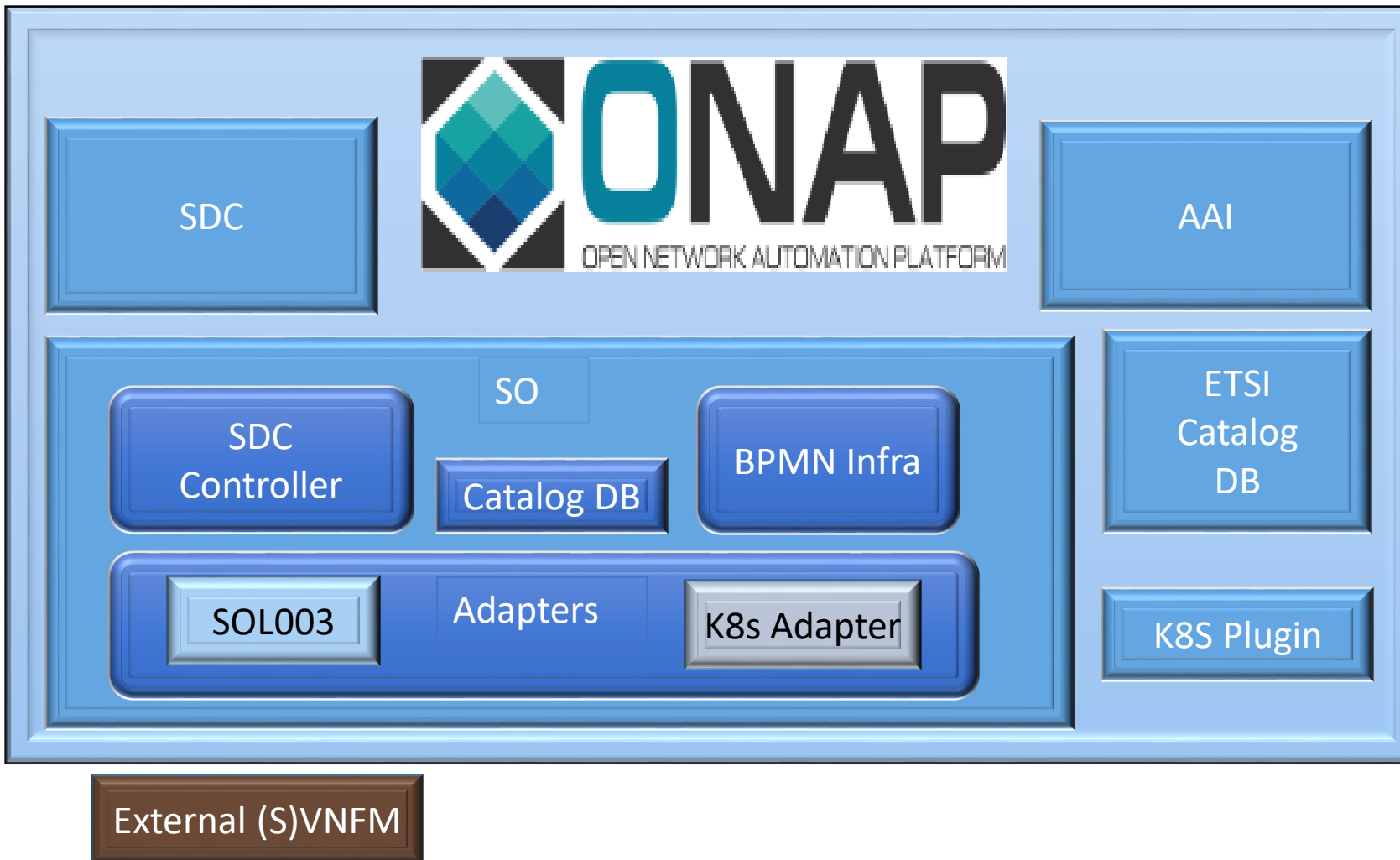
SDC:
On-board the helm and process it as an artifacts of the CSAR to be distributed
- ✓ On-board Helm Charts
- ✓ Resource model to include type
- ✓ (Design CNFs over helm)
- ✓ Distribute them in CSAR

SO:
Wont consume the Helm by itself but parse it and push it forward to other ONAP components
- ✓ Parse the Csar, containing helm
- ✓ SOL003 adapter enhancements
- ✓ New K8s Adapter (Interface to K8s Plugin)
- ✓ (Model driven workflow)

K8s Plugin :
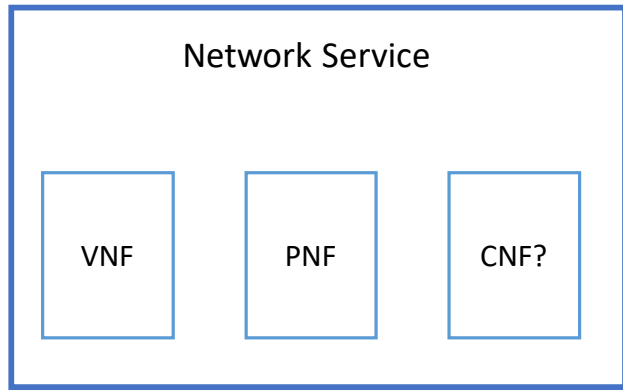- ✓ Support new API for the SO interaction

AAI:
- ✓ Persist the Service instance
- ✓ (Persist CNF as a resource)

ETSI Catalog DB:
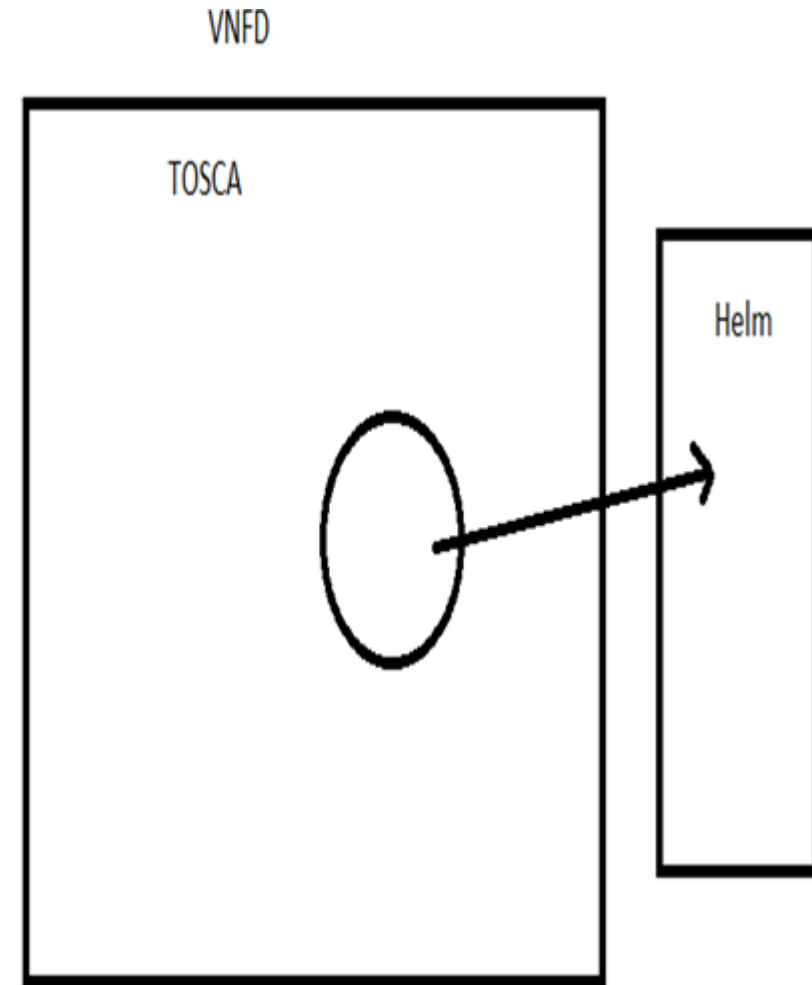- ✓ Persist the ETSi VNFM data (IFA-29 and IFA-40)
- ✓ Persist Images

ONAP - ETSI model Alignment

E2E Service

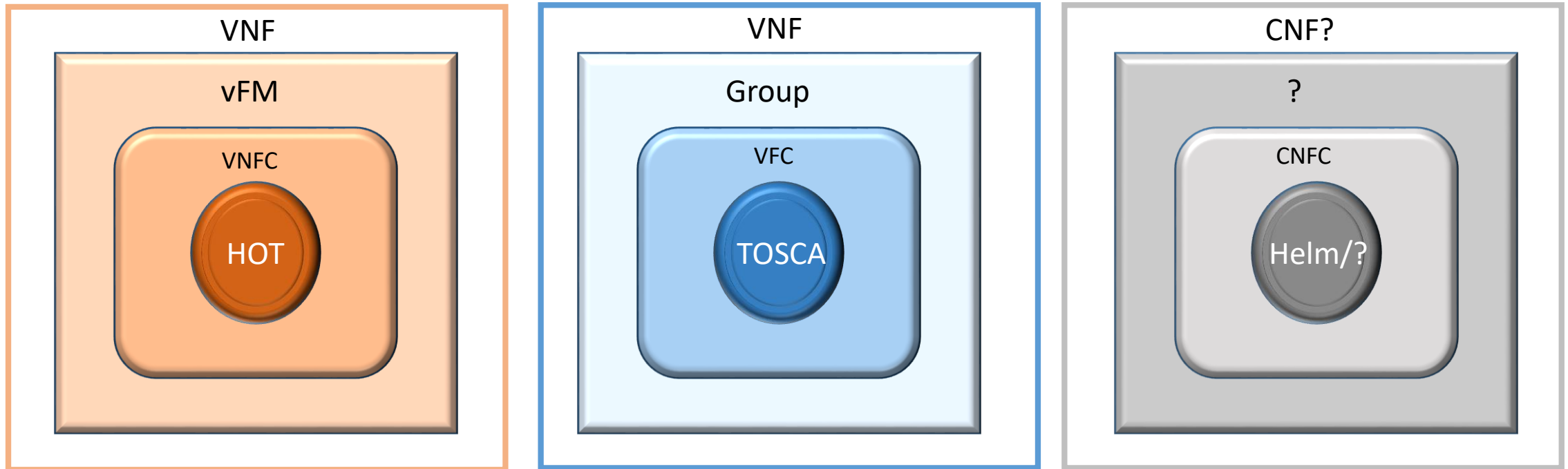Network Service

| VNF | PNF | CNF? |

1. AAI representation of the Pods

2. How will the AAI persist it

3. how will the closed loop components deal with this persisted objects

ETSI model to be discusssed

VNFD

TOSCA

Helm

Approach 1

Introduce a new model type into the SDC ,AAI built over the helm charts as an input and would be distributed to the other ONAP components
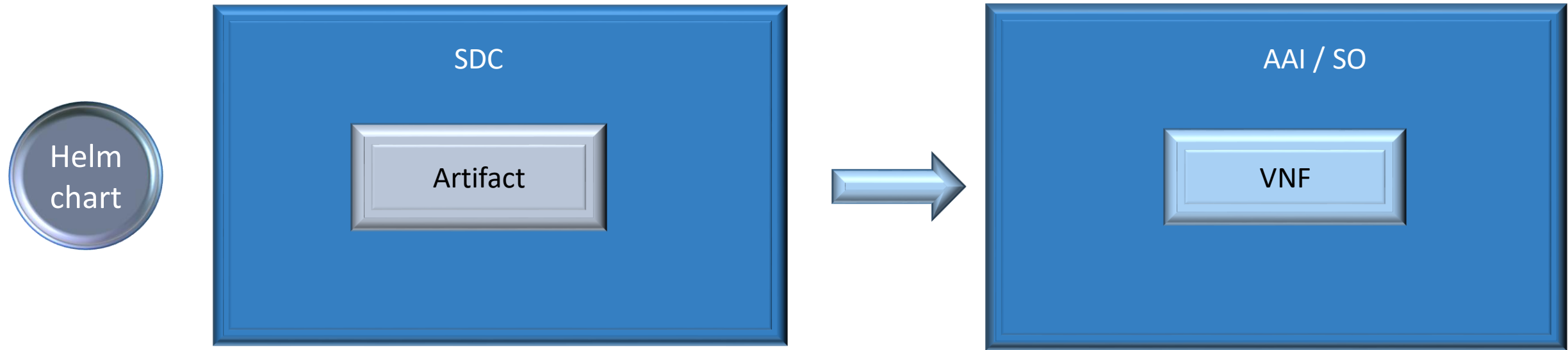
Pros
- ✓ Onboard a design template to the SDC and create a new resource from that
- ✓ Requires a new model to be introduced
- ✓ Will be inline to the existing models of the heat and TOSCA based VNFs
- ✓ Can also be extended to other formats for CNF modeling

Cons
- ✓ Initial analysis for understanding the standard model
- ✓ Requires more effort and may span across multiple ONAP releases
- ✓ The grouping model currently used in ONAP may pose a one-one mapping to the other standard formats

Approach 2

Helm chart → **SDC** (Artifact) → **AAI / SO** (VNF)

Helm Chart on-boarded as an artifact type to the SDC and distributed to ONAP, AAI would persist it as existing VNF
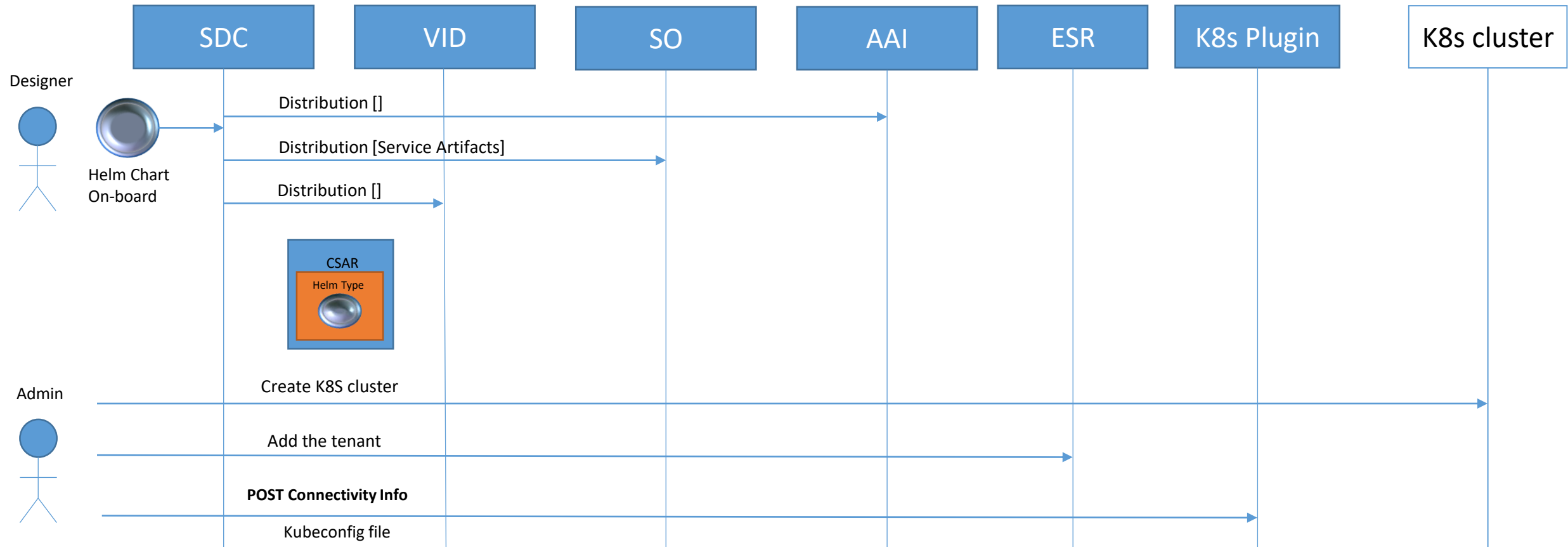Helm chart would be stored as flat file and add it to the CSAR package to be distributed.

Pros
- ✓ Easy to develop than approach 1
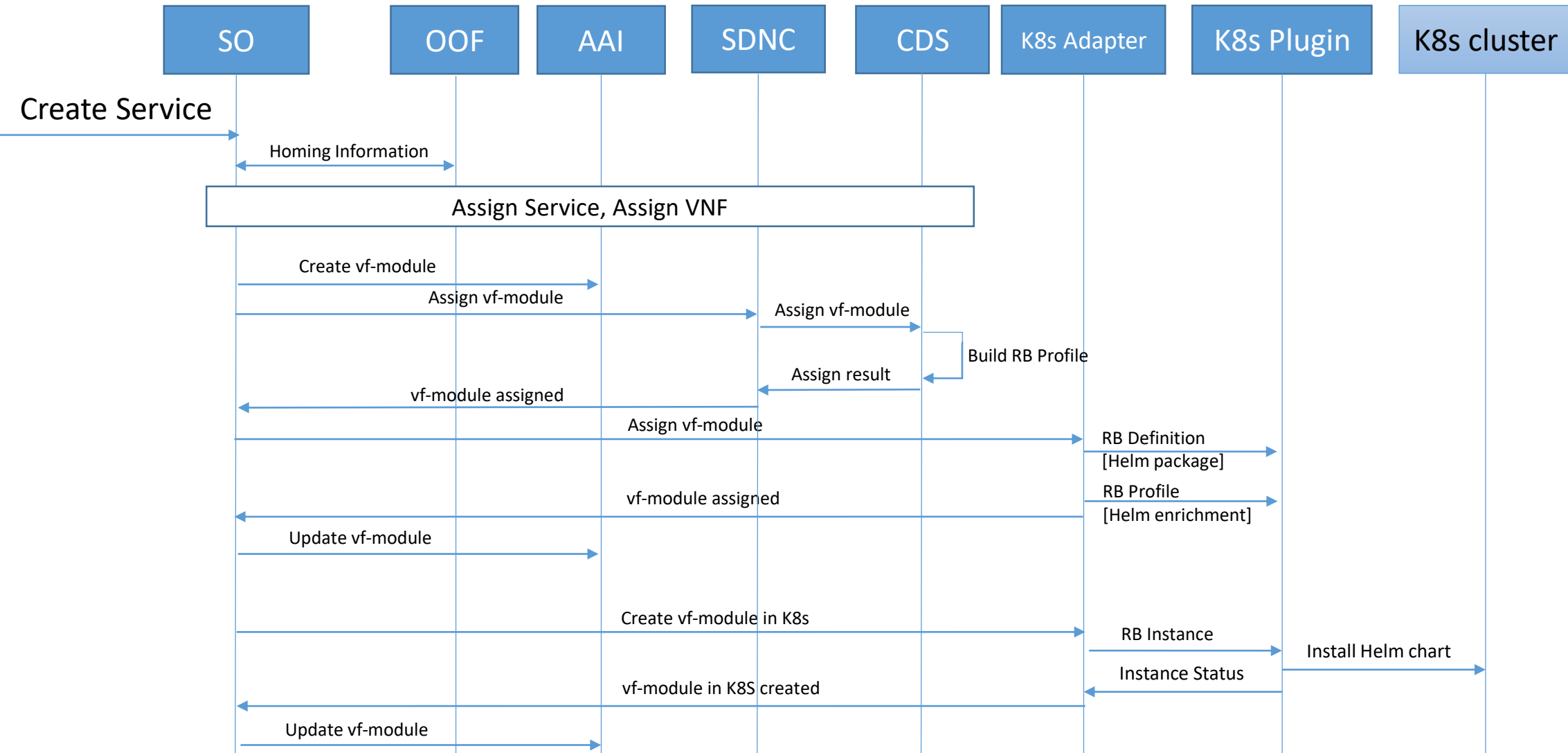- ✓ Better reuse of the existing functional code

Cons
- ✓ Initial analysis for AAI persisting the CNF instance – Extend the VNF
- ✓ Very specific implementation and non extendable

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Guilin - Design and Distribution of the Helm Chart - Day 0

SDC   VID   SO   AAI   ESR   K8s Plugin   K8s cluster

Designer

Helm Chart
On-board

Distribution []

Distribution [Service Artifacts]

Distribution []

CSAR

Helm Type

Admin

Create K8S cluster

Add the tenant

POST Connectivity Info

Kubeconfig file
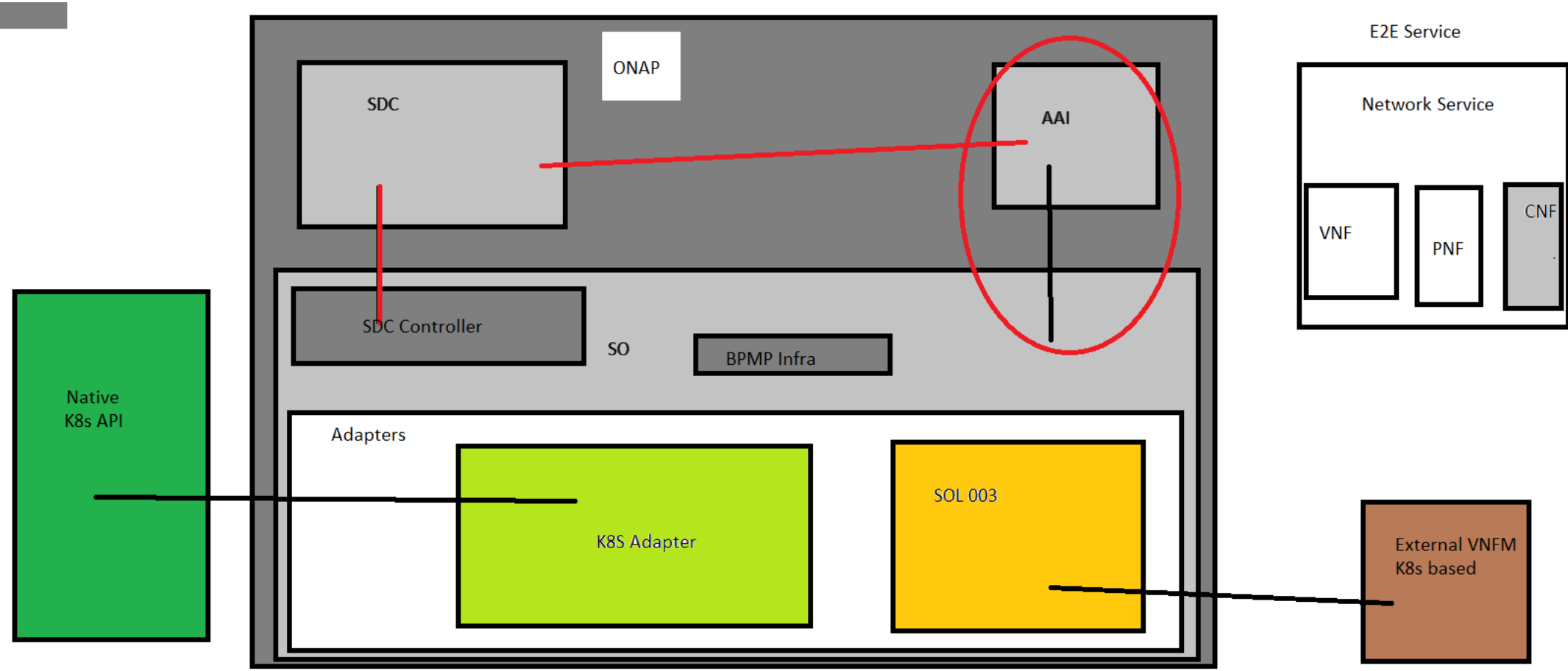
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Guilin – Instantiation of the Helm Chart (Simplified) - Day 1

Thanks

CNF Orchestration Scenarios - Guilin Proposal

Possible Approaches

Approach 1:

VNF	VNF	VNF ??
VFm	Group	??
VNFC	VFC	CNFC
Heat	TOSCA	Helm / ??
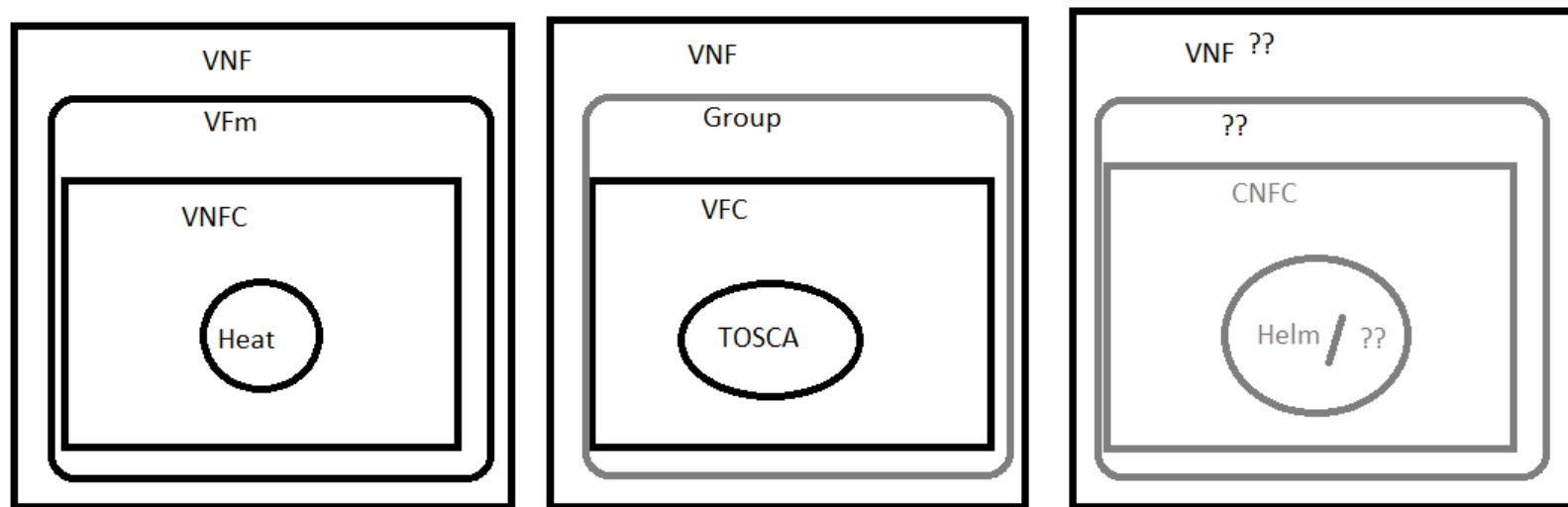
Approac 2:

SDC Artifacts : New type - Helm

AAI need to map to existing model